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INDUSTRIAL PHOTOGRAPHY.

WITHIN the commercial and industrial world, photography of late years has worked even greater changes than steam and electricity, and is now as universally employed.

There is to-day not an industrial establishment, from the iron-masters who build our great warships, down to the makers of mousetraps, that does not employ photographic processes in connection with their business, running the whole gamut from thousands of square yards of blue-print paper in the first instance, to a home-made 4x5 photographic show-card in the latter.

But few persons have an idea of the enormous proportions the use of this single factor of cyanotype or blue-print paper has assumed in the industrial arts since the discovery of the process by Sir John Herschell about the year 1848, and the subsequent introduction commercially in America by Thomas H. McCollin in 1871. At first the demand came principally from architects for a few sheets at a time, now hundreds of thousands of square yards are made annually for different trades with automatic machinery that coats the paper evenly in rolls, and yet the demand frequently is greater than the supply, on account of the constantly increasing demand, and the various new uses to which it is applied.

Thus we are informed by the William Cramp & Sons Ship

and Engine Building Company, who have taken so large a part in the construction of our new Navy, that about 11,000 square feet of blue-print paper are required for working plans in the construction of one of the great battleships or armored cruisers that they are now building for the United States Government.

The first great industrial establishment to start a strictly photographic department in connection with their plant, was the Baldwin Locomotive Works of Philadelphia. It came about in the following manner: Just prior to the outbreak of the civil war, there was considerable rivalry between the locomotive builders of that day, and a Jersey concern made an attempt to have an engine photographed. For this purpose they applied to a New York photographer, who had the only large camera then in the United States. This operator made several attempts to obtain satisfactory negatives, without result. This coming to the notice of the Philadelphia establishment, and as no other could be found to make negatives of the size wanted, one of the firm applied to Mr. Coleman Sellers, who had previously obtained some negatives of the machine tools made at his establishment.

These negotiations ended in Mr. Sellers instructing Mr. Wm. P. Henszey, of the Baldwin Company, in the secret arts and mysteries of wet-plate photography. A set of rooms was at once fitted up for the new department. At the very outset Mr. Henszey was confronted by a new difficulty; there were neither camera, trays, printing-frames, nor utensils to be had of the size wanted,—viz., for 14x18 plates, which they concluded was the proper size and proportion to show a locomotive to the best advantage.

To obtain these results, Mr. Henszey had to have the necessary apparatus made. However, when spring was well advanced, several successful negatives of the above size were made, the engine standing across Broad Street. These negatives were printed on plain salted paper, and the volume, with all specimens dated, which is still in possession of the Company, forms an interesting proof of the permanency of early photography.

A year later, towards the close of 1862, the Baldwin Company on account of the increase of their business incident to the de-

mands of the Government, turned their whole photographic plant over to Mr. Albert Hemple, who remained in charge for many years.

When Mr. Hemple started in he determined to make his pictures as near perfect as possible, and well we remember the many difficulties he had to overcome. One of his most stubborn troubles was caused by the reflections from the polished metal-work on the engines. He had no one to go to for advice, no text-book to look to for information. Every improvement had to be worked out by practice and experience. Where at first the operator anxiously looked forward for bright sunlight, he soon learned that a somewhat cloudy day and lengthened exposure gave the results longed for. But few photographers of the present day can form any idea of the trials experienced by Mr. Hemple in those early days of industrial photography. These photographs were used by the Baldwin Company to advertise their establishment, and being a novelty, did much to bring their product to the notice of the great corporations of that day.

At the present day two sizes of negatives are made by the establishment, 4x7 and 16x29. Of the former about 2500 silver-prints are used annually; of the larger size about 500 silver-prints, in addition to 1,000 collotypes, are required to meet the demands of the business department of the works.

When Mr. Hemple started in to make industrial photography a distinct business, it was prophesied that the venture in connection with industrial establishments would never be a success. Now every establishment, from locomotive builders and makers of machine tools down to the jobbing machinist of any pretensions, either employs an expert photographer or has a regular operator to picture the finished products, and frequently for showing the work in the various stages of completion.

The photographs of such bulky subjects are now not merely used as advertisements or show-cards, as they were in former years, but as a medium to solicit business, and thus sell the output of the mill.

The camera and dry-plate, together with the various photo-reproduction processes, have done more to revolutionize commer-

cial methods than even the printing-press. For instance, take the commercial traveler or drummer; where that ubiquitous individual formerly carried a number of heavy sample trunks, he now carries a light grip, and solicits his orders by photograph, thereby saving his employers expense and his patrons time and annoyance. This condition holds good in almost every branch of commercial activity, except with articles of food, wines and liquors, and drugs.

Industrial photography has within the past few years opened out new and important fields for the commercial traveler, and now enables him to sell goods "on the road" that formerly were out of question.

Thus, for instance, there are establishments that make a specialty of fitting up libraries, drug-stores, bar-rooms, and offices. Each place as they fit it up is photographed, and the picture becomes a "sample" to take other orders by. Other examples of special trades benefitted by industrial photography are to be found among makers of furniture, steam engines, heavy machinery, boats of all descriptions, from racing sculls to the river steamboat, building hardware, china and glassware, looking-glasses, frames, fine silverware, fireproof safes, gas fixtures, wood and willow-ware, bronze work, hats and caps, boots and shoes, clothing, carpets, rugs, oilcloths, and, last of all, coffins, caskets, and undertakers' supplies, all are shown and sold in store and on the road by photographic samples.

The most curious application of industrial photography to commercial uses is in the tobacco trade, where manufactured tobacco and cigars are now sold by photograph, a few specimens only being carried to show texture and color. Extensive as the uses are of photography, by the industrial and commercial community, the art science has been brought into even greater service by the great corporations.

Now every municipal government has its photographic department, whose duty it is to picture all public works in progress at the successive stages of development; thus being an aid to the engineers in charge, and placing before the heads of departments the progress of the work without the loss of time entailed by a

personal inspection, and at the same time proving a check upon tricky or dishonest contractors.

Almost every railroad company in the country now has its photographic corps ready to start out with plates and camera at a moment's notice, not only to aid the construction and kindred departments, but as an important aid to the legal department of the corporation in case of accident or law-suit.

It is however in the advertising department of the railroad and steamboat companies that railroad photography has reached its greatest development. Stations, portions of roadway and plant, bits of scenery along the different lines, are now photographed, printed, and mounted in the highest style of photographic art, for the purpose of bringing the advantages of their respective lines before the traveling public. Thus during the past summer the writer, while in South Germany, saw exhibited views taken on the great Pennsylvania Railroad, side by side with pictures of old cathedrals in England, advertising British Railways, and scenes on the Nile, which set forth the merits of an Egyptian Steamboat Company. No better advertisements have yet been devised for the uses of transportation companies than the means offered by modern photographic processes.

The real estate business is another industry that has impressed photography into its service, and thereby branched out until it has assumed proportions that would have been impossible but by the aid of photography. Every architect has his own outfit, and the pictures of his finished work not only act as a record for him, but at once become a means in the hands of the real estate operator to advertise and sell his buildings.

Agents and operators in real estate have long since realized the great results that are to be gained by a judicious use of industrial photography. Photographs of the houses they have to rent or sell, no matter whether it is a country villa miles away from the office or a city property, are shown to prospective patrons, who can thereby at once see whether suitable or not without a tiresome journey, thus saving both agent and client time and expense.

Perhaps the most curious illustration made to stimulate an industrial enterprise by the aid of photography that has come under

the writer's notice, were a series of photographs of blocks of manufactured ice, that were brought into service not only to advertise the refrigerating plant, but also to sell the finished product.

By the examples above quoted it will be seen what a wide range and scope this branch of photography has assumed, and the important factor it is destined to prove in the future.

JULIUS F. SACHSE.

Notes on Development.—Success in photography is generally easy and simple, provided a little care and judgment is exercised in the development. It is well known that an experienced amateur or professional can often obtain fair printing negatives from plates so much under or over exposed as to be complete failures in the hands of one less experienced, yet this can readily be attained with very little experience by the practice of what is known as Tentative Development; the principle of which is to immerse the plate in a developer composed of a minimum of alkali and reducing agent (pyro, hydrochinon, eikonogen, etc.), aiming to gain all possible detail with this weak developer, and at the same time gaining a knowledge of the further treatment required in case of over or under exposure, adding further alkali or reducing agent as may be seen to be required to build up detail and density in the image. Development so conducted is of course a slower operation than when a normal mixed developer is used, but the results amply repay for the extra time and care. It is also advisable to consider the subject of exposure and use the developer in proportions to suit; for instance, in portraiture all ingredients but the water should be decreased, the resulting weak developer produces the soft image requisite in a portrait, and avoids the necessity of much retouching. For landscapes it is necessary to considerably increase the quantity of the reducing agent, at the same time decreasing the alkali and adding a few drops of the restrainer, resulting in slower development but increased brilliancy, as nothing so detracts from a landscape view as flatness. The practice outlined above is not confined to any one developer, but may be adopted with any two-solution formula published. Another important point to be observed in the successful production of bright, clean negatives, is that the plate should be covered during the whole process of development and the cover only raised to examine progress; this being observed, prolonged development will seldom be found to result in fog, as is too often the case.—*John Carbutt.*

HERMANN VON HELMHOLTZ.

HONORED and mourned by all, Prof. Von Helmholtz, one of the most brilliant men who have devoted their lives to science, passed away at Charlottenburg, on the 9th of September. Shortly before his death the Empress Frederick sent a telegram of inquiry as to his condition, and upon hearing of his decease messages of sympathy were sent to the sorrowing relatives by the Empress herself.

Hermann Ludwig Ferdinand Helmholtz was born August 31, 1821, at Potsdam, where his father, Ferdinand Helmholtz, was Professor in the Gymnasium, his mother, Caroline Penn, being of an English family. While but a school-boy he developed a love for science, and studied all the books on physics which his father's library contained. They were very old-fashioned, phlogiston still held sway, and electricity had not grown beyond the voltaic pile. When the class was reading Cicero or Virgil, he was finding the paths of the rays in a telescope, or developing optical theorems not usually met with in text-books. At that time there was little possibility of making a living out of physics, so, acting on the advice of his father, Helmholtz took up the study of medicine. He entered the Army Medical School, the Friedrich Wilhelms Institut, and while there came under the influence of a profound teacher—Johannes Müller. He eventually became a military surgeon, and continued in that position till the end of 1848, when he was appointed Assistant of the Anatomical Museum of Berlin and Teacher of Anatomy at the Academy of Arts.

In 1847, that is during his career as an army surgeon, Helmholtz's essay, "*Ueber die Erhaltung der Kraft*," was published. In this the principle of the conservation of energy was developed. About Joule's researches on the same subject he knew at that time but little, and nothing at all of those of Robert Mayer. He was led to write the essay by an examination of Stahl's theory, adopted by most physiologists, which accorded to every living body the nature of a perpetuum mobile. The essay con-

tained the results of a critical investigation of the question whether any relations existed between the various kinds of natural forces for perpetual motion to be possible. It was written for the benefit of physiologists, but to Helmholtz's surprise the physicists took up the doctrine of the conservation of energy, which some of these were inclined to treat as a fantastic speculation. Jacobi, the mathematician, recognized the connection between the line of thought in the essay and the principles investigated by Daniell, Bernouilli, d'Alembert, and other mathematicians of the last century, and soon the members of the then young Physical Society of Berlin accepted Helmholtz's results.

It is unnecessary for us to dwell upon the marvelous influence that these results have had upon physical science during the last half century. The principle of the conservation of energy has long passed through the combatable stage, and some of the greatest discoveries in thermodynamics and other branches of modern physics have been deduced from it.

In 1849 Helmholtz went to Königsberg as Professor of General Pathology and Physiology; seven years later he accepted a similar position at Bonn University. While at the former University he designed the ophthalmoscope for the diagnosis of the diseases of the inner parts of the eye—a discovery which shows the great importance to the physiologist and physician of a thorough knowledge of physical properties. The year 1859 saw him occupying the chair of Anatomy and Physiology at Heidelberg, and in 1871 he was appointed Professor of Natural Philosophy at the University of Berlin, a post which he held until his death.

The two great works of Helmholtz on Physiological Optics and on the "Sensations of Tone," are splendid examples of application of methods of analysis to the two kinds of sensation which furnish the largest proportion of the raw material for thought. In the first of these works the color sensation is investigated, and shown to depend upon three variables or elementary sensations. The study of the eye and vision is made to illustrate the conditions of sensation and voluntary motion. In the work on the sensation of tone is a physiological basis for the theory of music.

The conditions under which our senses are trained are illustrated in a yet clearer manner. His researches threw a flood of light upon what may be termed the mechanical, physical, physiological and psychological processes involved in seeing and hearing. No good end would be served by enumerating Helmholtz's contributions to knowledge. The versatility of his genius is well known among all workers in the realm of nature. Mathematics, physics, physiology and psychology are but a few of the branches of knowledge which have been enriched by his investigations. His acquaintance with science was not only extensive, but thorough, and, as Clerk Maxwell said in 1877, the thoroughness was that which of itself demands the mastery of many sciences, and in doing so, makes its mark on each. He solved problems with which great mathematicians since the time of Euler had occupied themselves in vain. Questions as to vortex motion and the discontinuity of motion in liquids, and the vibrations of sound at the open ends of organ pipes, belong to this class of subjects elucidated by him. In his numerous papers on thermodynamics he reduced to an intelligible and systematic form the labors and intricate investigations of several independent theorists so as to compare them with each other and with experiment. Other subjects investigated by him, electrodynamics, stereoscopic vision, galvanic polarisation, the theory of anomalous dispersion, the origin and meaning of geometrical axioms, the mechanical conditions governing the movements of the atmosphere, the production of waves, etc. But even the circle of natural and physical sciences does not embrace all the subjects which he benefited by his keen insight and strenuous energy. He was an acute logician and an accomplished metaphysician. His investigations on perception and observation of the senses led him to study the theory of cognition. The principle he came to after an examination of the subject was that the impressions of the senses are only signs for the constitution of the external world, the interpretation of which must be learned by experience.

In 1891, when Helmholtz reached his seventieth birthday, the event was made the occasion of an international celebration. In honor of the anniversary a marble bust was prepared,

and numerous marks of respect were bestowed upon him by his admirers, both in and out of his own country. The German Emperor raised him to the highest rank in the Civil Service, the Kings of Sweden and Italy, the Grand Duke of Baden and the President of the French Republic conferred grand crosses upon him; many academies, not only of science, but also of the fine arts, faculties and learned societies representing all parts of the world, sent him diplomas and richly illuminated addresses, expressing their recognition of his scientific labors, and their thanks for his work. His native town, Potsdam, conferred its freedom upon him, and countless individuals sent their congratulations. It was on the occasion of this jubilee that Helmholtz delivered the autobiographical sketch published in the second volume of his "Scientific Lectures," and which has furnished us with some of the particulars contained in the foregoing.

He was made a foreign member of the Royal Society in 1860 and elected a member of the Philosophical Society at Philadelphia, April 18th, 1873, and received the Copley Medal in the same year. He was also one of the Associates Etrangers of the Paris Academy of Sciences, and a correspondent of most important scientific academies and societies all over the world. Science has had few investigators who have furthered her interests more than Helmholtz. He was constantly exploring new fields of research or bringing his keen intellect to bear upon old ones. With his contributions he helped to raise science to a higher level, and while he did as much as anyone to render scientific discoveries understandable to the whole intellectual world, he always recognized that he was in the service of something that should be held everlastingly sacred, a feeling which kept him from playing to the gallery either in his popular works or his lectures. Many years ago it was written:—A wise man instructeth his people, and the fruits of his understanding fail not. A wise man shall inherit glory among his people, and his name shall be perpetual.

To no one could these words be more appropriately applied than to the eminent investigator whose loss we now deplore.

—*Nature.*

THE IDEAL DARK ROOM.

BY JAS. DAVENPORT.

PROBABLY no portion of a photographer's outfit receives less attention and care than his dark room. Provided he can find an empty cupboard or receives a gracious permission to use the coal cellar, he is satisfied; and there amid dirt and dust and unhealthy odors—sans water, sans ventilation, sans conveniences of every kind—he cheerfully works on, utterly oblivious of the white light that *will* find its way through the ill-fitting door, and forgetful—or ignorant—of the fact that he is courting weakness and ill-health by inhaling the noxious fumes and vapors of alkalines and acids of the most powerful kind.

To comparatively few is it possible to have an ideal dark room, but no worker—Croesus or Lazarus—is justified in working under conditions such as those we have described. A little ingenuity, a little momey, and much common sense should prove a compound out of which any decent camera lover could manufacture a healthy and serviceable dark room.

The essential qualities of the ideal dark room are a thorough absence of white light, perfect ventilation, plenty of non-actinic light and a good water supply. Of these, the first is the only *sine qua non*, and yet, next to the matter of ventilation, it is often the most difficult to obtain. Who of us cannot recall the many ineffectual attempts we made to keep white light on the other side of that obnoxious window, and when at last we succeeded and turned round to revel in what we thought would prove Egyptian darkness, with what disgust did we observe the volume of light which forced its way round the door? Oh, that door! How it vexed and worried us! We papered and pasted and plastered and puttied, but for a long time without avail. We thought of Carlyle's words: "Men love NOT darkness; they do love light," and we wondered whether he wouldn't have changed his mind if he had been an amateur photographer at work in his dark room; but we stuck to our post and eventually we rose triumphant even over that door.

To proceed. There are several methods by which any ordinary window may be "blocked." The easiest and simplest would be either to board up the entire window, or to paste brown or other opaque paper over every sheet of glass. If the former is adopted, wood technically known as "matching lining" should invariably be used, as the boards are so made that they "tongue" into one another and so prevent light penetrating the joints. Of course both these methods mean a permanent blocking of the window, and are at the same time very unsightly. A third and much recommended plan is to make a framework of light wood (say that known as slating battens, $\frac{3}{4}$ inch thick and two inches wide, and which may be purchased at any timber yard for about two shillings and sixpence per 100 ft. run). Let this frame be the exact size of the window frame, and fill up with thin card or strawboard, fixing such crosspieces of wood to the frame as the cardboard may demand. An opening the size of the largest plates used, and which could be covered up when desired, will be found of material advantage for enlarging or reducing purposes. A strip of some woollen material should be tacked round the window, against which the frame should be bedded, and held in position by a metal button at each corner, so that the entire frame could be removed at any time and the window readily restored to its normal condition.

And yet another method of effecting our purpose would be to provide a curtain of some opaque cloth, and either attach it to a roller so that it could be raised or lowered as an ordinary blind, or fasten rings at each corner from which it could hang. But we only refer to this method incidentally, as it is not one to be recommended; it is very rarely successful, and always uncertain and fickle in use. Time, energy, and money have again and again been wasted in attempting to adopt this simple plan.

As regards the door, light may be effectually excluded in most cases by tacking or gluing a strip of velvet or similar material all round the recess in the door frame, so that the door closing on to a soft, spongy bed is made impenetrable.

The question of ventilation is a difficult one. If the room is fairly large and provided with a fireplace, there will probably be

a sufficient change of air continually going on, but if the room is a home made one and is really a kind of sentry box standing in a bed-room or bath-room, the case is different. An outlet in the roof and holes in the bottom as usually considered sufficient are practically useless. No system of ventilation applied to such a room can be called perfect unless it be a mechanical one—that is, unless a stream of air is forced through the room by means of a fan or similar contrivance operated by clockwork or other motive power. Of course to the majority of workers this is impracticable, but the next best plan is as simple as the other is elaborate. Procure from any ironmonger a length of ordinary stove piping and fix it over a hole in the roof, which hole, by-the-by, should be immediately over the bracket on which the lamp is usually placed—a “rose” or “bend” at the upper end of the tube to intercept the entrance of white light completes our ventilator. The *raison d’être* of this arrangement is that the warm air from the lamp creates a draught through the tube, and the greater the length of the tube the greater the draw.

It is not necessary to dwell on the ventilation of dark tents. Whatever manufacturers or advertisers may say to the contrary, such ventilation can only prove, from the very nature of the article, to be practically without effect.

The third essential qualification of an ideal dark room—plenty of non-actinic light—presents no great difficulty. In all cases artificial light should be employed, and, unless isochromatic plates are used, orange in preference to ruby. Before earnest work is attempted by the light of any lamp, it should be submitted to the most rigorous tests as to the photographic safety or otherwise of the glass with which it is glazed. A large proportion of the lamps sent out by makers are useless for even the slowest plates. Good and safe ruby glass is difficult to obtain, and orange even more so. In testing it is well to use an ordinary rapidity plate and to turn the wick of the lamp as high as possible without causing the flame to smoke; leave the plate within say twelve inches of the light, and if on development no darkening of the film is visible, the lamp may be considered safe. Once the glass of a lamp is proved to be non-actinic, confidence is in-

spired, and no fear is felt while working by its aid. For any but the most rapid plates it is always well to use plenty of light. "Let there be light," is one of the earliest commands, and to thousands of amateur photographers this command might with advantage be echoed: "Let there be light." Without hesitancy we advance the opinion that too little light is responsible for the loss of more plates than the use of too brilliant illuminant. It is impossible to judge of progress, of density, of fixation, of the proper mixing of developers, and to perform the varied manipulations of development in the dim obscurity by which so many workers delight to surround themselves. Plenty of good orange light should be a universal dark-room maxim.

The next essential of an ideal dark room is a good water supply. To no class of workers is water and plenty of it more necessary than to photographers. Almost every process to which plates and prints are subjected means water. Sometimes the boast is heard that so many plates have been developed in so little water. The principle is wrong—emphatically wrong. The more water an operator uses within reason the better are his chances of securing clear negatives and clear prints. A scarcity of water means dirty dishes, dirty hands, ill-washed plates, and a general want of cleanliness all round. Every endeavor should therefore be made to secure an abundance of fresh water. It is, of course, advisable wherever practicable to have a connection between the tap in the dark room and the main or the cistern which provides the household supply. Failing this, a small cistern, say five or ten gallons, should be kept in the dark room filled and always ready to be drawn from.

"Water, air and cleanliness," said Napoleon, "are the chief articles in my pharmacopia." No dark room can be considered ideal unless "water, air and cleanliness" are distinguishing features, and no photographer, no matter how clever or how brilliant he may be in the field or studio, can rise to the full height of his individual capabilities until, in these respects at any rate, his dark room is an ideal one.—*Photographic Answers.*

PLAIN WORDS.

BY WALTER D. WELFORD.

IN the good old days the cry of you professionals was against an amateur receiving money for his work, and even the athletic definitions were brought to the front to show that an amateur should not even accept money prizes in competitions.

How the whirligig of time doth change us all. Now you are pleading exactly the other way. You want amateurs to charge a fee for the reproduction of their pictures in illustrated magazines and papers, so as to prevent easy access to photographs free of cost by the editors of such papers. Nay, more, a union of amateurs, or their inclusion in the copyright union, is advocated.

This curious turn-about face clearly shows that you ordinary professional photographers are not very far-seeing individuals. You deal with the present only, and take but little thought for the morrow. A further proof of this is to be found in the pernicious habit of price-cutting, against which evil no remedy proves satisfactory. In Australia, union for that purpose has proved an utter failure, whilst America is complaining loudly.

What about our own country? Well, what has the National Association of Professional Photographers accomplished? Anything? May be, but not much. Even a simple question like that of copyright has been very simply and quickly effected by a few London photographers with the aid of the Chamber of Commerce.

Has the association raised prices, or even kept them up to a fair level? Has their attempt to make a difference in cost between the amateur and professional in regard to trade houses been of any practical utility.

The fact is, you professional photographers have done too much of the folding hands trick. Instead of setting the amateur about the ears as you have done in the past, why did you not treat him as a friend, meanwhile taking good care to excel his work, and also to beat him in speed of execution. What is the

use of crying over spilt milk, when you alone have spilt it? Surely, with your knowledge and practical work, the enormously greater conveniences for work, and the number of hands employed, it would have been easy to outstrip the amateur, with his more or less home-made appliances.

This applies not only to the turning out of proofs and copies, but also to the adoption of new printing processes and other novelties. You should be, nay must be, first in these matters.

We have had many remedies suggested for reviving what is now a trade under a depression. And it is a good old plan to investigate backwards, to find some of the causes for the evil to give a clue to the remedies needed.

I pointed out last month that there is much to be done with the photo-mechanical methods of printing. The Sun has been, and still is, a good friend to photographers, but he's a bit behind the times—he's too slow for the present age of rush.

The days of portraiture for personal gratification are gone; it is now a business of celebrity and beauty selling.

Sitting down writing wails about the amateur is wasting time that might be profitably utilized otherwise.

Let the amateur alone, he's not a bad sort, and watch for new outlets for your own work.—*The Photographic Review of Reviews.*

M. Ducos Du Hauron is about to start a photographic newspaper in Algiers, which the French photographic journals claim will be the first brought out in Africa. In relation to photographic journals they are now so numerous that we do not know where some of them have homes. French photographers have a way of starting journals cheaply by lithographing them in clear writing instead of using type; the societies at Versailles and at Douai started, and perhaps still issue, their journals in this way. They contained contributions of good quality. At Douai there is an exceedingly intelligent society of educated amateurs, which has the advantage of the use of a portion of a public building built for scientific purposes. The printing frames are exposed on a leaden roof, which, when we inspected it, was also the permanent playground of a pretty little tame monkey. How he and the printing frames got on together in the long run is a question of absorbing interest.—*Exchange.*

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ETUDE.

PHOTO-CLUB DE PARIS.

NEGATIVE BY M. A. CHAUVET, REPRODUCTION FROM PHOTOGRAVURE.

Special Correspondence of AMERICAN JOURNAL OF PHOTOGRAPHY.

THE TOURIST'S PARADISE.

IN the mind of the average American tourist abroad, all Europe dwarfs into insignificance beside the French metropolis on the banks of the Seine. On the steamer, in the hotels, at the cafés or bankers, wherever Americans are wont to congregate, the usual topic of conversation and culmination of their trip seems to be Paris.

Under such conditions the representative of the AMERICAN JOURNAL OF PHOTOGRAPHY abroad also became somewhat infected, and arrangements were made for a stay of about a week in the American tourist's paradise,—Paris.

It was late on a Sunday night when the camerist from Turkey-town arrived in the French Capital. The ride from Cologne had been long and tiresome, and if that individual photographic pilgrim then and there longed for any special thing, it was a good supper and night's rest.

Arriving at the "grand" hotel that had been so highly recommended by a fellow traveller, it soon became apparent that at that particular hostelry with high-sounding name and Baedeker prestige the culinary art was far from perfect, while the condition of the rooms as to cleanliness left much to be wished for.

However, early next morning an effort was made to secure better quarters. These were found at the Hotel Wagram, facing the Garden of the Tuileries. Here were all the comforts of an American Hotel, including an elevator, and best of all, the *Concierge*, a pleasant young woman, spoke fair English, while the chief *garçon* understood Pennsylvania German in addition to French. So between the two our wants were understood and cared for, making one feel that life was worth living,—even in Paris.

After a good lunch a start was made to see the sights of the city, the initiative being a saunter down the Rue Rivoli from the hotel to the Palais Royal.

The first peculiarity to attract attention was the fact that almost every shop in the Colonnade dealt in photographs, such as they

were. The subjects exposed in the window were almost invariably a nude study such as would be interdicted in any other city throughout the civilized world. Occasionally there would be a religious subject, or a view of the Carnot obsequies sandwiched among these specimens of the so-called "French" art.

To make matters even worse, in almost every window of these shops was to be seen the legend in English, "Fancy photographs inside." Well, we did not go "inside;" the specimens exposed in the window were enough to satisfy us. At one of these shops, however, a trifling purchase was made, and the proprietor was asked who were his chief patrons for the vile photographs he exposed for sale. His answer unhesitatingly was, "Almost exclusively Americans," men and women. "If," continued the dealer, "it were not for them, the business would be as dead as Carnot in less than six months."

He further called the attention of the writer to the fact that the advertisements and placards in the shop windows referring to this class of pictures were invariably in the English language.

Strange to relate, in corroboration of the merchant's statement, even while he was speaking, an American, known to the writer as a man of family and reputation at home, and a vestryman in a fashionable church, entered the shop, looked over the pile of photographs, selected a dozen of the nauseous prints, paid his twenty francs, and took them away with him.

Comment upon above is unnecessary. Who knows; perhaps one of these fine days the Philadelphia papers in writing about this same staid citizen, will have a column with double-leaded headlines, that "Another good man has gone wrong," whereas in reality it should read, "Another bad man found out."

However, to return to the subject. After going the round of French museums, salons, and art galleries, it certainly seems as if the whole stock in trade of the French School of Art consists of two subjects, viz.: The nude female figure and Napoleon Bonaparte. This holds equally good in the various graphic arts, as on canvas or photography. Take away above two subjects from French artists, indigeous and acclimated, and the result will be a salon with bare walls.

This peculiar feature of French art is also prominent, only in a less degree, in the show-cases of many professional photographers, where theatrical subjects are represented in posture and drapery which, to say the least, are questionable even for Paris.

In a tour among the leading professional photographers in Paris, and a careful study of the legitimate specimens of photographic portraiture exposed in window or case, the fact soon became apparent that there was nothing to be found in Paris in the way of photographic portraiture that was superior or equal to the work of our own professional bread-winners in America.

In any of the larger American cities finer specimens of photographic portraiture are to be seen in show window and case than among the Parisian artists. This fact was a great surprise to the writer, yet in all candor it must be told, that in technique, retouching, posing, and lighting, American photographic artists are certainly ahead of their French competitors.

There is, however, one special feature that our home artists would do well to follow their French brethren in,—namely, the employment of carbon tissue for fine work. It pays well. The effects are good, and especially if the shades of color are well selected.

In regard to landscape photography, there is nothing in all France to equal the work done by a number of American artists and particularly Wm. H. Jackson, of Denver, Colorado.

The most pleasant feature of our sojourn in Paris was a visit to the rooms of the Photo-Club de Paris, and the courteous reception by the secretary, M. P. Bourgeois.

The club rooms are situated in a large building, No. 40 Rue des Mathurins, and are, perhaps, without exception, the most complete in Europe. Beside the rooms for meetings and committees, there are dark rooms and cabinets for every photographic process, from a fully equipped studio for portraiture to a mounting room. Attendants are always present, and members can have any part of their work done at a reasonable cost,—from developing the plates to mounting the finished print all is done within the club rooms.

At the present time there is certainly a photographic boom

among advanced amateurs, for which the Photo-Club is mainly responsible.

An exhibition was held in Jauuary last, which brought out many creditable efforts from home and abroad. The wise precaution was taken to give each and every exhibitor a medal. Consequently there was no dissatisfaction with the judges or committee. This is an innovation well worthy of the attention of our societies at home and elsewhere.

As a souvenir of this exhibition the club has issued a fine volume, wherein the gems of the exhibition are reproduced in photogravure.

Another exhibition is announced for January, 1896, the society's chief object being to increase the artistic side of photography. From present indications the coming exhibition is expected to exceed all previous ones from an artistic standpoint. Inquiry among the advanced workers of the club disclosed the fact that the tendencies for the future in exhibition subjects were drifting towards a rough, artistic paper, and, strange to say, they look to America to eventually supply that long-felt want.

One of the most important features of the Photo-Club's library is a card catalogue, noting every photographic formulæ and process. This important work was compiled after months of labor by M. Bourgeois, the secretary.

It is further a pleasure to record to the credit of the Photo-Club of Paris, that no specimens of "French Art" such as are mentioned in the introduction of this paper are found upon the walls of the club rooms.

As to the materials used by French professionals it was found that French dry plates were in use to the exclusion of all others. Aristo and gelatine papers are pushing albumen hard, and for a time it seemed as if one of the leading American papers would crowd out all others, domestic as well as foreign. However, the writer was informed upon good authority that an English paper was now extensively sold in Paris to the exclusion of the American product.

This, it is stated by our French informant, was not the fault of the American paper or any superiority of its English com-

petitors,—in fact the latter was not considered near as good,—but merely on account of a lack of brains or business capacity of the parties who had the management of the American product in charge.

A personal investigation of this interesting subject proved the correctness of the gentleman just quoted. The fact cannot be denied that the American paper is preferred by most of the leading Paris photographers.' So far, so good.

In looking up the other part of the statement, the writer found the quarters of the American Company on one of the leading boulevards—sumptuously fitted up, it is true, with a numerous personelle, but no one could be found with either time or inclination to give a stranger any information about either their establishment or product. In the effort to obtain some facts regarding the use of those especial photographic products in Paris, for publication, eight visits were made to this particular establishment, and the best part of three days of valuable time lost in the vain attempt to obtain some common business information. It was always, better see some one or another who was out. Well, when at last one of these personages was caught in the shop, the excuse was that it was past lunch-time; call again in a short time. Three hours later the party had not yet returned from lunch; better call to-morrow. When the next day came we were blandly told that the gentleman had gone out riding for the day, and so it was. And yet some people wonder why British manufacturers are supplanting American competitors in some foreign markets.

Verbum sap.

J. FOCUS SNAPPSCHOTTE.

Paris, September, 1894.

A Tiny Painting.—Probably the smallest painting ever made was the work of the wife of a Flemish artist. It depicted a mill with the sails bent, the miller mounting the stairs with a sack of grain on his back. Upon the terrace where the mill stood were a horse and cart, and on the road leading to it several peasants were shown. The picture was beautifully finished, and every object was very distinct, yet it was so amazingly small that its surface could be covered with a grain of corn.

LIGHTS AND SHADOWS.

CHAS. SCHERHOLZ.

ON looking at the work turned out by the majority of portrait artists—I mean those who finish enlarged prints—one cannot but be struck by the similarity in methods of working which prevades them. The greatest defect, in my opinion, is a want of atmospheric effect; that which gives it roundness, softness, and above all, life. Who has not seen the bust portrait of the man or woman where the contour cuts the background in sharp lines; or the full length picture of a child with every object introduced brought out sharply? Then, too, in the handling of the shadows as they occur in the face and hair, it is a common thing to see them depicted as solid, opaque masses. The continuous black line does duty for the upper and lower eyelids, for the nose, mouth and ears, and if there be a preponderance of shadow in the face this is given as one unbroken mass. Now, however pleasing this may be to the uneducated eye, it certainly is not true to nature. If we examine the head closely, under any condition of light, the lines and shadows which we find there will be seen to be soft and undulating—that is, not continuous to any great extent of a certain character. Take for instance the lines of the eyelids, or rather the shadows occurring about the eyes, and you will find that they vary in their intensity. The same applies to the nose, mouth and ears. Just as the character of the lights varies from the highest point on the forehead to the more diffused lights on the lower parts of the face—I am writing now of an ordinarily lighted head—so the shadows also have different degrees. One has only to study the works of great portrait painters, such as Rembrandt or Van Dyck, to find this principle applied, and it is, in my opinion, more than anything else which gives to their work that mellowness with which they are imbued. Now, although it is a long step from a Rembrandt portrait to a print finished in pastel or crayon, yet I hold that much can be learned in seeking to imitate the methods of great men, and thus bring about a higher standard in that class of work. It may be

said that the artist cannot afford to spend the time in applying such principles to his work. But I am sure that a short trial will convince him to the contrary if he has good perceptive qualities. For not only will it be the means of cultivating his mental perceptions, but it will also give to his work a distinctiveness at once gratifying to himself and pleasing to those for whom the work is done.—*The Frogressive Art Journal*.

INCONSISTENCIES OF ILLUSTRATION.

EDWARD B. WARMAN, in a communication to *The Writer* commenting upon the book illustrations of the present day, says that he has an illustrated edition of "The Raven," in which the artist has depicted Poe with outstretched arms and clenched hands, imploring the raven to tell him if there is "balm in Gilead."

"Tell me, tell me, I implore."

The illustration speaks command. One never pleads or implores with clenched hands (except in pictures) if he expects to receive either a tangible object or an immediate answer to a heart-felt prayer. The hands may be clasped—not clenched—when anguish predominates; but even in this condition the arms would not be outstretched. The very nature of things forbids an objective gesture with a subjective thought.

In making pictures for the old, and yet favorite, song, "Comin' thro' the Rye," the illustrator frequently falls far short of representing the idea of the author when he pictures the lassie coming through a field of rye. In this case the very beauty and delicacy of the song is lost; for there is nothing to cause a "lassie" to be "shy" when coming through a field of rye, or wheat, or oats, or any other grain; but there is cause when the bare-footed lassie, with carefully adjusted dress and skirts, "meets a laddie" while she is tip-toeing her way on the stepping stones across the swiftly-flowing Rye of Bonnie Scotland.

In the beautiful edition of Shakespeare's "Seven Ages of Man," issued by a prominent Philadelphia publishing house, the artist

has illustrated each character according to his conception, but not always consistently with the text.

" Then the soldier,
Full of strange oaths, and bearded like the pard."

I fear that the artist has not been sufficiently observing of pards, or he would not have given his hero full whiskers or a beard.

It has always been a matter of surprise to me that great artists in painting angels have always represented them as women; and that in painting devils they have always represented them as men.

It may be human nature for women to be angelic, but that does not argue that men are naturally devilish.

Again. Why should an artist give wings to an angel? Surely wings are not essential for the flight of a spirit; *i.e.*, I do not think they are.

If angels have wings, and if angels can communicate with their earthly friends, this world would not have been so long in darkness concerning the making of those appendages. No indeed! Some Yankee angel—possibly a Darius Green—would have imparted his knowledge long before now, and the wing question, or man-flight, would have been settled, while some Yankee brother or other friend of the angel would have a monopoly on wings.

Used to it.—The amateur photographer is as common on the ocean steamers as in the streets of Boston. A Boston girl who took her camera to Europe with her this summer one day saw the first mate standing on the bridge, making a very imposing figure, and remarked to a companion: "Oh, I must have a picture of him. I wonder if he'll let me?" Catching up the camera she ran across the deck and called to him: "Please stand still a moment; I want to snap you." Instantly the officer struck a magnificent attitude with one arm extended as if giving an order. She snapped. The lookers-on shouted with laughter and someone remarked, "Oh, you've been there before!" "Every trip," came down the answer.—*Boston Journal.*

NOTES ON THE MOUNTING AND FRAMING OF
PHOTOGRAPHIC PICTURES.

BY JOHN SCOTT, M.B.

WHEN I received from our amiable but energetic editor a request for a contribution to the *Journal of the Camera Club*, couched in firm but gentle language, I felt bound to comply, and forthwith set myself to consider upon what possible subject an obscure individual like myself could write anything that might be in any way useful to such an august body of readers as the *Camera Club*.

Subjects photographic seemed to be out of the question, for, to write on such for readers mostly more learned than myself, seemed too like "Teaching one's grandmother;" like writing "A treatise on the theory and practice of egg-sucking—a book for grandparents,"

"Teach not thy parent's mother to extract
The embryonic atoms of an egg by suction;
The good old lady can perform the act
Quite irrespective of thy kind instruction."

That advice remains as true now as the day in which it was written. So subjects purely photographic had to be put on one side, though doubtless there are tempting themes in that line—"Intensification and reduction of the undeveloped image;" "The development of unexposed plates"—and similar scientific titles suggest themselves at once, only to be at once discarded.

Then there is the unfailing and unending topic of art, which we have always with us. What reams are written on art; and what rubbish most of it is, with its attempted definitions of the undefinable and explanations of the inexplicable. Besides, I have never spent a winter in a house-boat on a mudflat, and that is an essential qualification for anyone who aspires to write on art.

Still, though the line seems blocked in the direction of what to take and how to take it, there is more to be done yet before the picture is fit for exhibition, and I think that the mounting, framing, and naming of pictures deserves more attention than it usually gets. So far as I know, there has been one paper and

discussion on the subject at the Camera Club, and that is all. An occasional article appears in one or other of the photographic papers, but as they frequently suggest the utilization of old cigar boxes for frames, and the beautifying the same with fragments of cork, walnut shells, or, even worse, sea shells, they are not of much value to us.

First then, when we have got our picture we must call it something. Give a dog a bad name and hang him by all means, if you feel so disposed, but you must proceed differently in the case of a picture that you propose to hang. You must give it a good name, a name that suggests what was in the artist's mind while making the picture, that tells something more than merely what the picture represents, and where the view depicted is to be found.

Too often a catalogue of an exhibition of pictures with their titles is no less prosaic than an auctioneer's inventory of household goods. It is impossible here to give any suggestions as to actual titles—a line or two from one of the poets often is good. But, whatever the title, it should tell the spectator what to look for in the picture, what the picture was taken for, so that he may, if possible, look at it as the artist himself saw it.

Then, with regard to mounting. The first question is whether the picture should be mounted at all, or whether it should be framed close up. That, of course, depends much upon the picture; but, generally speaking, small pictures (say less than whole plate) are better for mounting, and large ones are better without.

The color and texture of the mount depends upon the color and texture of the picture, and upon the effect we intend to produce, for in the different colors and shades which we can use for our mounts we have a great power of altering the effect produced by the picture. For instance, a flat grey picture, weak in contrasts, will look flatter and weaker on a brilliant white mount, while on a dark mount, or with a dark frame close round it, it will gain considerably in vigor of contrast. Sometimes one sees fantastic and eccentric mounts. These are seldom advisable, and, except in the hands of a very few, are dangerous. The ready-made plush mount so often seen is quite suitable for the picture usually seen in it—the highly-glazed portrait, retouched until the

complexion is that of a bladder of lard rather than a human face.

The shape of the mount is a matter of considerable importance, and should vary with the shape of the picture. This is too often neglected, and in every exhibition one sees pictures spoilt by being put on wrong shaped mounts. A long and narrow picture on a square mount is a glaring but not infrequent example of how not to do it. This is one great objection to the ready-made plate-marked and tinted mounts. They lead either to the picture being trimmed to fit the mount, or else to a picture being placed on a mount of a totally different shape. Still they are convenient and save trouble, and though, of course, they are shams, and as such to be avoided, it is likely that they will continue to be popular. Brown paper is used by some, and makes a good mount for some sepia-colored pictures; but it should be brown paper of a good quality, and not full of bits of straw as used by some exhibitors, for it is not necessarily artistic to make use of any old rubbish that the cook or housemaid may have thrown away, for the setting off of our pictures.

This naturally leads us to the same fashion in picture frames. What possible merit can there be in making frames of old packing cases, rough and unplanned, and perhaps painted over with a bronze paint of some kind or other? There were a lot of more or less good pictures spoilt by such frames at, I think, last year's Photographic Salon. Then, too, these frames are not consistent in their roughness. To be so the joints should be as rough as the wood. Instead of being nicely mitred, they should be joined by a couple of French nails, or even tied together with a piece of string. But in any case they are silly, and affected, and inartistic, and probably we shall not see many more of them.

The ideal frame should set off the picture to the best advantage, and not draw the attention from it to itself. Another function of the frame is to isolate the picture from its surroundings, with which, as well as with the picture, it must be in harmony. From this it is obvious that the same frame will not always be the best for exhibition, and also for the walls of an ordinary room. Perhaps the style of frame that best answers both purposes is that largely used by Mr. Hollyer, and familiar to all.

Of ready-made frames, and even of ready-made mouldings, there are not many that one can use with advantage. As for the blue and white plaster and enamel frame, with its pale-blue plush mount; the looking-glass frame, with poppies painted on it, and a hole through which the portrait peers at you, and the many kindred abominations, these are only used by the very amateur, or rather immature, photographer, and do not concern us here.

It has often been a source of wonder to me that photographers so seldom make their own frames. They often prepare their own paper; they would scorn the idea of letting anyone else develop or print for them. Some of them even make their own plates; but they are almost all quite content to take their finished picture to a frame-maker, and let him do what he likes with it, and what he very often likes is a flat light oak frame with a sham gold mount for a light grey platinum print. If one gives a frame-maker a design for a frame, it is often difficult to get him to carry out one's ideas properly, and in any case the cost is considerable, and generally out of all proportion to the work done. There is very much to be gained by making one's own frames, and very little to be said against it. It takes time, but so does the whole practice of photography. The difficulties in the way are but small, and most good photographers have sufficient manipulative dexterity to soon learn what they cannot already do. The tools wanted are but few, and the expense incurred would soon be made good by the saving in the cost of frames, while the advantages of being able to frame one's own picture as one wishes it to be done are obvious.

The materials out of which frames should be made are not many in number. For photographs, with the exception of plain or reeded black mouldings, wood is almost the only permissible material. Almost any kind of wood, either in its natural color or stained, can be used. The most useful are pine, oak, ash, and walnut; occasionally mahogany may be used, but for most photographs the color is undesirable.

Many kinds of ready-made mouldings are to be had, but only a few are really good. A good moulding may often be got from a builder,—one that has been designed by an architect

for the interior work of a house. These are generally better than the ordinary run of picture mouldings, they are cheap, and, being made of pine, are easy to work; of course these will require staining. Very complex and ornate mouldings are to be avoided; but an absolutely flat frame, with square edges, and not bevelled anywhere, is perhaps worse, though some well-known exhibitors rather affect the style.

For joints the plain mitre is at once the best and the easiest to make; there is no particular advantage to the square mortised joint: it is stronger of course, but a good mitre joint is quite strong enough.

The question of joints leads me to what I consider a very important point,—viz., the width of frame mouldings. This is especially important where there is little or no margin between picture and frame. I have already said that the mounted picture should be of the same shape as the picture alone; that is, that a long and narrow picture should have a long and narrow mount, that the margins at the ends should be wider than those at the sides. The same holds good with the frame. The picture when framed should be (more or less) the same shape as the picture itself; in a long and narrow picture the end mouldings should be wider than the side mouldings. It will be found in practice that it will not do to make the frame, or mount either, exactly the same shape as the picture in all cases, for in very long and narrow pictures it looks absurd, but there should be some approximation to the same shape. One often sees this principle carried out in mounts, but I have never seen it in frames; and to my mind it is quite as important in the frame as in the mount; except, perhaps, in pictures with a large margin and narrow frame mouldings.

Take, for instance, a picture 3 inches by $1\frac{1}{2}$ inch. This, if framed close up with say 1-inch moulding, would give outside measure of frame 5 by $3\frac{1}{2}$, which would be not at all the shape of the picture, and would look horrid. If we keep the 1-inch moulding for the sides and widen the ends until the relative proportions of length and breadth are the same as those of the picture, we get 7 by $3\frac{1}{2}$, the end mouldings of course being twice

as wide as the side mouldings. That, perhaps, is rather overdoing it, something between the two would be better; but in all cases of long pictures, with little or no margin, there should be some difference between the widths of the ends and of the sides. The mitre under these circumstances is of course not quite so easy to cut, but there is no real difficulty; it only necessitates a small alteration in the shooting board.

There only remains to be considered the color of the frame. If made of dark wood it is generally best to leave it its natural color, if of light wood it usually requires staining. The color, of course, must depend upon the color of the picture, and upon the effect one wishes to produce. Green is a color that seems to be in great favor just now, and if one gets the right green it is as useful a color as any, and will do for almost any photo-picture. The greens, however, that one too often sees are not good, they are too light and sickly; much of the fashionable green furniture is of this objectionable shade. Then too I have seen frames painted a dead and rather light green; I have seen them on our own walls. It may seem presumptuous to say so, but I do not like them (though the mouldings in themselves were particularly charming). I do not like the color, and it seems to me a pity to lose the beauty of the grain of the wood. A frame made of yellow pine, stained a dark brownish-green, with or without a line of gold about it, and wax-polished just enough to bring out the grain without making it shine, is a frame that will take almost any picture, and will look well almost anywhere. Green stains are not easy to get; the only one I know of is not permanent but fades badly, so I will not mention its composition; but doubtless some of our chemically-learned members can help in this matter.

I find on reading this over that it all sounds very dogmatic, but that was rendered necessary by what I fear has been a vain effort to be brief. My object has really been not so much to instruct my readers as to set them thinking on the subject for themselves, instead of trusting so much to others both for ideas, and also for carrying them out.

SIMPLE TESTS FOR WATER.

A NUMBER of simple tests for impurities in water are given by Walling :

(1) For organic matter put a little of the sample into a beaker, add two or three drops of dilute sulphuric acid, and color distinctly with a solution of permanganate of potassium. If much organic matter is present, the color of the permanganate becomes discharged almost immediately; if less or very little, it takes longer to decolorize. If the color has not changed in twenty-five or thirty minutes, it is safe to assume that organic matter was not present. This is a tolerably reliable test.

(2) For nitrates a little sulphuric acid added to the water forms nitrous acid if nitrates are present, which is easily detected by its power of liberating iodine from iodide of potassium. A little starch paste is mixed with a small quantity of a solution of potassium of iodide, and the mixture added to the suspected water containing the sulphuric acid. If nitrates are present the nitrous acid formed liberates the iodine from the iodide, which turns blue with starch. This indirect method is a ready means for detecting the nitrites if present in not too small a quantity.

(3) Nitrates are detected by converting into nitric acid, which turns morphia red. A portion of water is evaporated to dryness, the residue treated with a drop of strong sulphuric acid (which makes nitric acid of the nitrate) and a portion of morphia added. If nitrate is present, the morphia gives red color.

(4) For ammonia, Nessler's reagent is by far the best test. It may be made by dissolving eighteen grains of oxide of potassium in a little water, adding solution of mercuric chloride until the red iodide of mercury first formed redissolves upon agitation. To this is added a solution of fifty grains caustic potassa and distilled water to make eight ounces. This reagent will detect .00375 of a grain in a pint of water by giving a yellow color. A reddish color or precipitate forms with larger quantities of ammonia.

THE PRISMATIC CAMERA.*

DURING the total eclipse of 1871, observations were made by Respighi and the author with a spectroscope deprived of its collimator, and a series of rings was seen corresponding to the different rays emitted by the corona and prominences. A similar instrument was employed during several succeeding eclipses, but the photographs were on so small a scale that none of the results came up to the expectations raised by the observations of 1871. As the solar Physics Committee is now in possession of a prismatic camera of six inches aperture, the prism having a refracting angle of 45° , it was determined to employ it during the eclipse of 1893. The instrument was placed at the disposal of the eclipse committee by the Solar Physics Committee, and was entrusted to Mr. Fowler, who took the photographs at the African station.

It also seemed desirable that a series of similar photographs should be taken at another point on the line of totality, even though an equally efficient instrument were not available. A spectroscope with two three-inch prisms of 60° , used in conjunction with a siderostat, accordingly formed part of the equipment of the expedition to Brazil, and was placed in charge of Mr. Shackleton.

The present preliminary report is intended to indicate the kind of results obtained, and some of the photographs are reproduced for the information of those specially interested, as it will be some time before the complete reductions are ready for publication.

At the African station thirty plates were exposed, fifteen during totality, and the remainder in the five minutes before and after totality. In Brazil seventeen plates were exposed during totality, and seven out of totality.

The most conspicuous lines, or rather portions of circles, seen in the photographs taken during totality, are the H and K lines of calcium, and in these rays the images of the various prominences are very clearly outlined.

*Abstract from a preliminary report on the results obtained with the prismatic camera during the total eclipse of the sun, April 16th, 1893, by J. Norman Lockyer, C.B., F.R.S.; read before the Royal Society, May 10th, 1894.

The lines of Hydrogen, extending far into the ultra violet, are also very prominent, and numerous other lines are seen in addition.

Isochromatic plates were used for some of the exposures, and on some of these the ring formed by the characteristic line of the coronal spectrum (1474 K) is clearly depicted, especially in the Brazilian photographs. A comparison with the photographic records of the corona shows that the prismatic camera has picked out the brightest parts of the corona in this way. All the photographs show a bright continuous spectrum from the inner corona. Some of the plates taken out of totality show numerous bright lines at the cusps of the crescent of the sun then visible, chief among them being the lines of hydrogen and the H and K lines of calcium; others, farther removed from the second and third contacts, show only the Fraunhofer lines.

Paper Pulp in the Manufacture of Pencils.—One of the difficulties which have stood in the way of the substitution of paper pulp for wood in the manufacture of pencils, says *Industries*, has been the toughness of the paper covering, and its consequent resistance to the action of a knife: but by a new process, which has lately been introduced, the molecular cohesion of the paper is modified in such a manner that it can be cut as easily as cedar wood. In realizing this the paper is in the first place made into tubes, and a quantity of these are placed in a frame at the lower end of the cylinder, the substance which is to be used as marking material being placed in the cylinder while in a plastic condition, and sufficient pressure applied to force it into the hollow centers of the paper tubes, the mechanical appliances for this operation being such as to insure the most perfect result. After the completion of this process the pencils are dried in a gradual manner at increasing temperature for six days, and then plunged into a vessel of molten paraffine wax, which renders the paper pulp of the required texture.

Society.—Mrs. Rittenhouse Biddleblood (of the "Daughters of the Revolution")—"You wish to become a member of the 'Daughters of the Revolution'—upon what do you base your right to membership?" Applicant—"I was born in Brazil."

GOOD LUCK IN PHOTOGRAPHY.*

CLARENCE B. MOORE.

I HAVE, during the past few years, devoted considerable time to photographic studies of colored subjects, and from time to time have been so fortunate as to meet with marks of appreciation at the hands of judges at various exhibitions.

Whenever at clubs, watering-places, and the like I show my friends any of these prize-winners I am always favored with the remark "Snap shot, eh? How lucky you happened to be around to secure that pose."

To this I invariably reply: "Yes, very lucky," and the question is dropped.

I am firmly convinced that he who trusts to luck in photography will end at the tail of the procession, and that the man who starts out to prove that luck is an important factor in photographic success will find himself in very tall grass before the end of the discussion. The leaders in photography and the rank and file have little but themselves to thank for their "luck" or their want of it.

It may possibly be of interest to some to know how a certain "lucky hit" was secured.

Last winter I happened to be lying at the wharf of a small Florida river town, and, after considerable debate, determined to try a picture of which I had been thinking for weeks, as there seemed to be considerable available material in the neighborhood. A part of a morning was devoted to persuading, with the aid of pecuniary inducements, various parents to allow five small colored children to pose in their everyday clothes. Colored people are sensitive as to their appearance, and still more so as to that of their children, and wish them to wear their most stylish garments when facing the camera.

Next came the choice of a background. The search was long and arduous, but finally a spot was selected with the proper morning illumination. A man was put to work with a hoe to

* Read before the Photographic Society of Philadelphia, October 10th, 1894.

make a clearing, as the picture was to represent a game of marbles, and grass, weeds, and the like would seriously interfere.

Next, accessories, "props," as they call them in the theatre had to be secured. A small cart in which one of the children was to rest was made from two large soap boxes, the second one furnishing material for the wheels; and a man was sent to the nearest town, five miles distant, for marbles. He, finding none there, was subsequently dispatched to Palatka, 30 miles away.

At the time appointed for the rendezvous but two of the children were present, and considerable time was wasted in drumming together the sitters. By this time the sun was out in full force, necessitating a postponement, since instantaneous work is not advisable with colored sitters, the additional shadow on dark skins having to be avoided by time exposure in diffused light. The maker of colored studies is usually forced to wait for flying clouds or an overcast day.

After several postponements the requisite weather presented itself, and the youngsters, with the aid of elder members of the family, were corralled and brought in from various pastimes and pursuits in the neighboring palmetto scrub.

The pose and arrangement had been carefully studied out beforehand and roughly committed to paper. Each child was provided with half a stick of candy, and promised the remainder conditional upon remaining still at the critical moment.

Four exposures were made, all of which were undertimed and some of which showed motion. After a day or two the sitting was repeated. Result: overtime, motion, ungraceful posing, and bad arrangement of lines.

A third time, after several days' delay, the matter was brought to a focus. This time I got one photograph with which I am not entirely satisfied, and hope at some future time to renew the experiment.

Résumé: Eight days' wait, ten dollars spent, fourteen exposures made, one photograph secured.

The case I have just cited is by no means an extreme one, for frequently, after equal trouble, the results are wholly negative.

So much for luck!

Photographic Hints and Formulae.

An Economical Gold Bath.—The borax bath, which is much used by professional photographers for albumen and collodion papers, has advantages over many other gold baths, of safety, the possibility of producing colder tones, and of simplicity. If suitably employed, it is, in addition to this, extremely economical, as it permits all the gold that has not been used to be recovered in the simplest manner. By this means the cost of toning is brought to a very small amount. The best manner of proceeding, and one that should be generally adopted, especially in small business houses, is the following: A light colored three to six pint bottle is filled with distilled water, and to every thirty-five ounces twelve drachms of finely-powdered borax is added. If occasionally stirred the solution becomes saturated in a few hours, but an important quantity still remains undissolved. In practice the necessary quantity of this stock solution is poured into a glass measure, add to every $3\frac{1}{2}$ ounces 3 drachms of solution of gold chloride 1:200; the bath is then ready for toning. After toning it is poured back into the stock bottle, and placed in a light place and shaken occasionally. After a few hours a blue-black precipitate of finely divided gold is formed. In repeated use, proceed as before, taking care not to allow the sediment to leave the bottle. If after frequent use the bath no longer becomes clear, but appears greyish red or brownish in color, a few drops of a solution of iron sulphate should be added, and allowed to stand a few hours: the sediment is then removed by filtering and kept. After this has been washed with boiling water and cooled, a pure mixture of gold with a little sulphide of silver is produced.—*Dr. Miethe, in Chronik.*

Another Method of Preparing Platinotype Paper.—Paper is coated with a solution of

Arrowroot 1 gramme.
Cold saturated solution of sodium oxalate . . . 50 c.c.

the solution being boiled until the sediment dissolves, and, according to the degree of porosity of the paper, being applied to the latter two or three times. For black tones the dried paper is sensitized in

Saturated solution potassium chloro-platinite . . . 5 c.c.
Saturated double oxalate of soda and iron . . . 8 c.c.
Saturated solution potassium chlorate 3 drops.

For sepia tones the following quantities of saturated solutions are taken :

Potassium chloroplatinite	5 c.c.
Double oxalate of soda and iron	4 c.c.
Neutral oxalate of soda	3 c.c.
Mercuric chloride	1 c.c.
Potash chlorate	3 drops.

More chlorate increases contrasts and a smaller quantity of mercury gives darker tones. The solution of double oxalate of iron and soda being sensitive to light, it should be preserved accordingly. Both solutions given above suffice for coating a sheet of paper 40x56 centimetres. For the best results the paper should be dried at a temperature of 35° C.—*Rundschau*.

To Prevent Frilling.—Soak plate before fixing in a saturated solution of potash alum.

FIXING SOLUTION.

Sodium hypo-sulphite	1 part.
Water	5 parts.

After well soaking, soak in a strong solution of alum five minutes, and wash.

INTENSIFICATION.

Saturated solution of bichloride mercury	1 pint.
Hydrochloric acid	1 drachm.

Bleach well, then wash thoroughly, then wash in the three-per-cent. sulphite solution given in amidol developer.

REDUCTION.

Soak the plate in a fresh solution as above of hyposulphite of sodium for a few moments; in a measure have a few drachms of a solution

Potash ferricyanide (red prussiate of potash)	5 grains.
Water	1 ounce.

Mix the ferricyanide in the measure, and pour the mixture on the plate, keep moving, and watch the progress of reduction, which will be steady.

RETOUCHING.

To give the surface of the plate a tooth for retouching, soak after washing in a three-per-cent solution of borax and dry.

If you are developing with pyro and find that owing to plate having been under-exposed you cannot get detail, try the addition of a few drops of rodinal, and you will be surprised at the detail and density it will bring out.

The Editorial Dropshutter.

French Art.—As pertinent to the subject of our special from Paris in this number, we print the following notice taken from a daily paper:

E. Vallet, a French picture dealer, of lower Sixth Avenue, New York, was raided by a Comstock representative last Friday. Twenty-eight pictures and sketches were removed from his store, and, together with the proprietor, were taken to the Jefferson Market Police Court. M. Vallet objected to the charge that there was anything indecent about the pictures.

"All these works," he said, "are copies of the masterpieces of French art. You send your American boys to Paris to learn our art, but you will not permit that art to have a representation here. Your boys are taught free in the schools of Paris. It is a shame. When I was young I wanted to go to the School of Fine Arts, but I could not because American boys had taken all the places."

M. Vallet is only an ordinary picture dealer, in a discredited quarter of New York, with probably no more or less knowledge of art than most of his class, but his remarks are worth reflection whether his exhibition was of a character to be suppressed or not.

An Encyclopedia Photographica.—One of the most pleasant episodes during a late trip to Germany was a visit to the great publishing house of William Knapp at Halle-a.-S., who are without doubt the largest publishers of photographic literature in the world. Exclusive of the serials, *Photographische Rundschau*, edited by Scolik and Neuhauss; *Das Atelier des Photographen*, by Dr. Adolf Miethe, and Dr. Josef Maria Eder's annual, or *Jahrbuch für Photographie*, this establishment publishes numerous photographic text-books, all well-known for their typographical and pictorial excellence.

All the works of Dr. Eder, Major Pizzighelli, Charles Scolik, Ludwig David, Alex Lainer, and other authorities of equal prominence, are issued from the press of William Knapp, of Halle.

During the past year this house has devoted its best talent and resources to the publication of a new *Encyklopädie der Photographie*, a comprehensive work by the best writers, covering every department connected with photographic art up to the present date.

For completeness, this new work it is thought will surpass previous publications in any language upon the art science. Thus far

there have been twelve parts issued upon following topics, all by well-known authorities :

- I. "Protection by Copyright," by Ludwig Schrank ; 58 pages.
- II. "Photography in Natural Colors," Eduard Valenta ; 82 pages, illustrated with 20 cuts in the text.
- III. "Collodion-Emulsion and Its Application for Half-Tone Originals," Arthur Freiherr von Hübl ; 104 pages, 3 cuts and 3 large plates.
- IV. "An Introduction to Photoxylographie," Alexander Lainer ; 52 pages and 12 illustrations.
- V. "Photography on Exploration Tours and Cloud Photography," Dr. R. Neuhauss ; 32 pages.
- VI. "Photo-Galvanographie," Ottomar Volkmer ; 94 pages, 16 illustrations and 8 photogravures.
- VII. "Failures in Photography and the Means to Overcome Them," Part 1, negative processes, H. Muller ; 72 pages, 9 illustrations.
- VIII. "Mikrophotographie and Projection," Dr. R. Neuhauss ; 58 pages, 5 illustrations.
- IX. "Failures in Photography and the Means to Overcome Them," Part 2, positive processes, H. Muller ; 75 pages.
- X. "Stereoskopie und das Stereoskop in Theory and Practice," Dr. F. Stolze ; 135 pages, 35 illustrations.
- XI. "Photo-Lithographie," George Fritz ; 153 pages, 8 illustrations, 8 plates.
- XII. "The Photography of the Invisible," Ottomar Volkmer ; 52 pages, 29 illustrations.

When this exhaustive work is completed, it will form a library for reference and practice in itself, and no photographer who has any knowledge of the German tongue should neglect to possess himself of a complete set of this *Encyclopedia Photographica*.

Photo-Chemical Studies.—Dr. R. Ed. Liesegang, of Dusseldorf, Germany, has commenced the publication of a text-book under above title. The first number has reached us, and deals among other subjects with the light-sensitiveness of the silver salts, electrolysis, decomposition of compound substances by means of the galvanic current, photolysis, nascent silver, etc. The same author has issued a volume on photographic chemistry for beginners. Both works are in the German language.

Wilson's "Cyclopædic Photography," by Edward L. Wilson, Ph.D. A volume of 450 pages. This work professes to be a

complete handbook of the terms, processes, formulæ, and appliances available in photography. The text is embellished with numerous engravings, and contains much information of value. Although not quite up to date, it is a book that will prove a handy volume to all who are interested in any of the photographic processes.

"The New Science Review."—A new quarterly conducted by J. M. Stoddart. Published in Philadelphia by the Transatlantic Publishing Company. The second number of this new quarterly has reached us. The October number is full of readable papers. We extend a hearty welcome to the new comer, knowing that it will be a valuable addition to our literature.

"Snapshot Photography ; or the Pleasures and Advantages of Hand-Camera Work," by Martin J. Harding. Published by Percy Lund & Co., London. This is a small handy book on snapshot photography. The editor is a well-known hand-camerist, and illustrated the book with his own efforts.

The Thornton-Pickard Shutter.—We have been lately been using one of the above shutters, and find that it has the following advantages :

The shutter is made on the curtain principle, and fits on the lens hood or tube.

By means of a patent rubber adaptor, it can be used on two or more lenses of different sizes.

The moving parts are extremely light. Therefore, the shutter gives no vibration.

It has great range of exposure, and will give exposures from fractions of a second up to minutes or hours.

When the pointer is set to the word *Inst.*, the shutter gives an instantaneous exposure, the duration of which can be regulated by a small speed knob.

The speed indicator at the opposite side of the shutter shows the speed at a glance.

By placing the pointer at the word *Time*, the shutter will stay open as long as the ball is squeezed.

For very long exposures, such as interiors, it is only necessary to pull the cord until the first click is heard ; the shutter will then stay open as long as is desired.

As the price is moderate, and the workmanship of a high class, it commends itself to amateur photographers.

The editor of the London *Amateur Photographer*, in his notice of the coming Pall Mall Exhibition, pertinently states that when examining the pictures of any photographic exhibition it would be interesting to know what share of the actual production of the print has been performed by the exhibitor. In many cases the subject would lose half its charm if printed in an unsuitable medium, and the photographer may be unacquainted with more than one or two methods of printing. Are we to consider that his judgment in selecting, say carbon or rough paper for a particular view, to be equivalent, or more than equivalent, to the technical skill of a more conscientious brother who would produce a slightly less effective picture from an equally good negative which was entirely his own work? Do the judges take this point into consideration?

Revival of Miniatures.—The Napoleon revival is bringing miniatures into favor again. It is wonderful what fidelity may be conveyed to a tiny oval. In a late letter from London, a correspondent mentioned a bracelet belonging to the Queen. Tiny locket suspend from this wonderful bracelet. Each locket contains the portrait of a grandchild or great-grandchild. The last to be added to the long list is the York baby. The bracelet is not cumbersome as one might suppose, from the army of offspring. Each miniature is tiny, and daintily set. How many grandmothers we know would like such a bracelet!

A camera especially adapted for the photography of meteors is said to have been invented by a Boston artist.

The following missive has been received by the publishers of the JOURNAL in the regular course of business; we are pleased to state that the writer is not a professional photographer, but a professional man who uses photography as a branch of his regular work:

"Deer Sirs the bil i ough you will be dew the 15 of this month, P S extent the time 30 days my wife is very sic i havent ben to my offise for 10 days half to sit buy hur nite and dey. P S due mee thiss faveur. Yewrs respectfully.

He got the extension asked for.

A bad man, though raised to honor, always returns to his natural course, as a dog's tail, though warmed by the fire and rubbed with oil, retains its form.—*Hitopadesa*.

Art Notes.

Technical Characteristics of Pictorial Art.—Mr. Charles Dyall, the curator of the Walker Art Gallery, Liverpool, a few weeks since delivered a lecture on the "Technical Characteristics of Pictorial Art." The lecturer introduced his subject with views of houses at Pompeii in order to display examples of the decoration of the interior walls, so beautiful in color and design, that were introduced after the lapse of many centuries into works on ornamental art for our guidance and instruction. Attention was called to the works of the early Italian artists in order to show their sincere and painstaking methods as practised by them up to the time of Raphael, who adopted a broader style with more freedom of action and finer grouping in the figures. The story of the modern Pre-Raphaelite Brotherhood was briefly told, and examples were shown of the works of Millais, Rossetti, Holman Hunt, Ford, Madox Brown, etc., and of the various styles and methods of the impressionist, symbolistic, and realistic schools. A most interesting feature was the description of methods of portrait painting, showing a portrait in colors in three different stages, from the laying in of the groundwork to the finished picture, and exhibiting also on the screen the various palettes and the colors used in the several paintings named thereon. An example was shown of a portrait painted at first in a complete tint of blue as a groundwork for the after painting of flesh tones, shadows, and carnations, and then the picture in its finished state. A copy of the direct style of portrait was then thrown upon the screen where the work was done at one painting in one sitting. The technical characteristics of other branches of pictorial art were described, such as etchings, mezzotints, photogravures, concluding with some fine examples of lithography and photography. An unusual and particularly acceptable innovation was the execution on the platform of a large water-color drawing by Mr. Albert Procter, who, in the short space of fifteen minutes, produced a Dutch costa scene, which was admirably effective.

Naturalism in Art.—In speaking of the recent exhibition of paintings of "Fair Women" at the Grafton Gallery, the *Spectator* says: The common ideas in picture-making that give so handsome and congruous an air to the large room, would be interesting to analyze at length. These painters so constantly employed in the complicated art of portrait painting, and so constantly successful, worked on a base of

secure science, very different from the tentative naturalism so frequent in the present day. Not only had they the secret of how to make paint lie handsome on canvas, but they had a clearly arrested idea of what a picture ought to look like, the kind of relief their flesh was to have against its conventional background, and how "a flesh" was to be made. In Reynolds particularly there was a conviction on two points—warmth of tone and fullness of form. It is sometimes argued that the glowing golden whites of the painting of this period are a mere effect of age and varnish, and that the chilly flake-white of the modern picture will acquire the same tone as years go on. Nothing could be more absurd. Reynolds, with his eye on Titian, definitely argued that the central important masses of a picture should be painted in warm colors, and that a white should be supposed "illuminated by the rays of the setting sun." He argued that the pleasure felt in such an arrangement had a logical basis in nature; that since the illuminated part of any object is warmer than the shadowed, so the relieved, lighted mass of a picture should answer with a warm color to the light that fell upon it. "It is presenting to the eye the same effect as that which it has been *accustomed* to feel." It is a curious piece of casuistry, but if any one compares the sunset illumination of a Reynolds with the paler tints of daylight in the lookers-on, he will see how steadily the painter acted on his theory. Upon this golden base he proceeded less by the modern piece-meal measurement of "values" than by the picture-making idea of "keeping" to get his idea of bright flesh, and in the treatment of forms, clumsy as his drawings sometimes were, he attained that full roundedness which the modern too often loses in the notation of minor planes and projections.

Professional Models.—The *Photographic News* gives us a suggestion, half in joke half in earnest, that is worthy of consideration. We all want figures in our landscapes, even although some of us do not know just where they should be put, and we never find the right kind in the right place, and at the right time. To supply this desideratum is the object of the suggestion. It proposes to induce, probably from the ranks of the unemployed, a number of people, both male and female, big and little, to form themselves into an association or guild of models, and, after sufficient training, to frequent the picturesque, and other localities to which photographers are mostly attracted. On a stick over his shoulder the male would carry a bundle and the female a basket on her arm, each containing a number of inexpensive but suitable costumes, and, to prevent misunderstanding, a scale of fees

might be arranged, varying of course according to the appearance or ability of the model. We rather like the idea, and as there is money in it for one who could undertake and properly manage such a guild, hope some one will take it up.

Complementary Colors.—A curious fact of which we were informed a short time since is, that two pictures have been made exactly similar in outline, but differing in such a manner that the pigments are precisely complementary of color and shade at every corresponding point. One of the pictures being in "natural colors," the other is of course quite meaningless in itself. Its function is, however, to *prepare* the retina for appreciating at their full value the colors of the natural picture. First the pseudoscopic picture is looked at steadily until retinal fatigue is induced, and then the pictures are quickly interchanged so that the negative after-image thus obtained falls upon the ordinary picture. The experiment, which we have not seen tried sounds interesting. But if the pictures are complimentary equally at every point we doubt whether the heightening of the colors by contrast would be fully appreciated.—*Optician*.

Photographic Reproduction of Chalk Drawings.—The observation made in this column, says the *Graphic*, with regard to the closeness with which chalk drawings could be copied in photography, received ample illustration in a case that I only heard of the other day. It seems a drawing made by a notable artist was obtained and carefully copied on exactly the right kind of paper by means of photography,—the imitation was said to be so complete as to almost deceive the artist himself. A good many copies of the print were then obtained; they were all carefully mounted in imitation of the original drawing, and these were all pledged at pawnbrokers in different parts of London for various sums. The majority of them were sold, and the affair was only found out by the artist discovering it in the house of a friend, and pronouncing it to be a photograph. This shows how difficult these copies are to detect, and what a splendid business might be done in fictitious drawings by the old masters by unprincipled people among the unwary. Is there no way in which a forgery of this description might be obviated?

There is nothing in the world which a resolute man, who exerts himself, cannot attain.—*Somadeva*.

Society Notes.

The Photographic Society of Philadelphia.—Stated meeting held Wednesday evening, October 10th, 1894, the president, Mr. Joseph H. Burroughs, in the chair.

The Board of Directors presented their monthly report, as follows:

Your Board of Directors has to report that since the last meeting of the Society in June two marked improvements have been made in the equipment of the working-room of the Society, a convenient stand having been provided for the second lantern-slide camera, and changes have been made in the arrangement of the lantern apparatus which will greatly facilitate their use at the meetings.

We have pleasure in acknowledging the gift to the Society, by Mr. Alexander Hemsley, of a handsome book-case for the reading-room, uniform in size and style with the others. The library has long suffered for want of room for the convenient and proper classification of the books, and with the relief thus afforded it is hoped that the library will soon be put in shape to be of greater use to the members.

The reports submitted by your treasurer to the Board show that in spite of the utmost economy in the management of the affairs of the Society there will be a deficiency in the funds at the close of the year unless provision is made for it by means of a public entertainment. To arrange for such an exhibition there has been appointed the following special committee: Messrs. Vaux, Redfield, Jennings, Stirling, and Troth. Your Board of Directors cannot too strongly emphasize the fact, however, that the Society cannot hope to continue in healthy progress so long as it lives beyond its income; and it is hoped that the members will remedy the evil by making an immediate and vigorous effort to increase the membership of the Society.

Mr. Wm. H. Rau was unanimously re-elected a Director to represent the Society in the American Lantern Slide Interchange.

We deliberate about the parcels of life, but not about life itself, and so we arrive all unawares at its different epochs, and have the trouble of beginning all again. And so finally we do not walk confidently towards death, but let death come suddenly upon us.—*Seneca.*

Photographic Scissors and Paste.

Cents are Legal Tender.—In amounts of twenty-five or under they will go anywhere in this country. There is one story so utterly ridiculous that it seems incredible that it should ever have been printed, which in one form or another makes the rounds of various newspapers of the country annually. Look for it and you will sooner or later see it crop up again. This tale is always based upon the unpopularity of the one cent pieces in the extreme West and Southwest. In its most common form it tells of some Eastern traveller who attempts to dispose of a hundred or so one-cent pieces in San Francisco, El Paso or some other place. The tradesman is always represented as looking at them curiously and declining them. The writers of these senseless tales may have been in the West or they may not. It matters little—their story is pointless. They seek to brand the mythical tradesman as of the same category with themselves. The cent is a legal tender in amounts of twenty-five and less. If an Eastern man in San Francisco or anywhere else owes a debt of twenty-five cents, and tenders twenty-five one-cent pieces in settlement, the courts will sustain him. Of course, the coins are not popular in the extreme West and South, but no one need carry 100 of them in a cigar box or anywhere else as useless metal. If you are in a city that has not a United States Sub-Treasury go to the post-office, dump in twenty-five cents, and see if you will have any difficulty in obtaining stamps or postal cards of like amount. If one is refused, a letter of complaint to the postal authorities will soon work the removal of an employee who would discredit United States money. It is well to bear this matter of the legal tender of a cent in mind. No one for spite can make a person take more than twenty-five of them in any single transaction involving the settlement of a debt. One need have no fear, then, of receiving \$100 in cents from some embittered debtor.—*New York Herald.*

Disraeli's Lasting Work.—The books on which Disraeli's reputation alone can be founded are "Coningsby," "Silby" and "Lothair." These all contain many striking epigrams, ingenious theories, original suggestions, vivacious caricatures, and even creative reflections, mixed, it must be admitted, with not a little transparent nonsense. But they are all so charged with bright invention, keen criticism, quaint paradox, they are so entirely unlike anything else in our recent literature, and they touch, in a Voltairean way, so deeply to

the roots of our social and political fabric, that they may long continue to be read. England will one day be just, as America now is, to one of her wittiest writers. He will one day be formally admitted into the ranks of Men of Letters. His books, even his worst books, abound in epigrams, pictures, character and scenes of rare wit. His painting of Parliamentary life in England has neither equal nor rival. And his reflections of English society and politics reveal the insight of vast experience and profound genius.—*The Forum*.

A naval officer once found he could not teach the youngest men in the Naval Academy not to squirm, and start, and jump, and plug their ears with their fingers when the heavy cannons were fired. It was of no use to argue with them, pleadings were in vain, and reproofs were useless. It was highly ridiculous to have a lot of young men, whose profession it is to make war when war is needed, act like school-girls when the sea artillery was in noisy operation. Finally the officer hit upon a plan. He had a camera "trained" upon his gallant cadets without their knowing it, and then he ordered broadside after broadside to be fired. The noise was thunderous, and the actions of the cadets were as usual most undignified and most unwarlike. A few days later some excellent photographs of the "young-men-afraid-of-noise" were hung in prominent positions to be a perpetual reproach to those who plugged their ears. These photographs did their work. The next time the cannon roared the cadets stood like statues carved from stone, petrified with their fear of the "deadly camera" and its brutal frankness.—*The Argonaut*.

Aluminium and Nickel Alloy.—A. E. Hunt exhibited at a late meeting of engineers at New York several specimens of an alloy of aluminium and nickel. The samples were in the form of rolled sheets $\frac{1}{4}$ -inch thick. In one of these a hole $\frac{5}{8}$ -inch in diameter has been extended to about two inches diameter when cold; whilst a strip of about three inches wide and 24 inches long had been bent in the centre, the deflection being about two inches. It was stated that the force necessary to bend this specimen had been equal to that required to bend a piece of 90,000-lb. steel. It also possessed the virtue of elasticity to a very remarkable degree. The alloy is of a white appearance and very light.

If our inward griefs were written on our brows, how many who are envied now would be pitied. It would seem that they had their deadliest foe in their own breast, and their whole happiness would be reduced to mere seeming.—*Metastasio*.

In the Twilight Hour.

ALL hills are steep to the lazy.

HE who robs God of his first fruits forfeits the whole crop to Satan.

ARE you willing to take your weights and measures to the judgment with you?

THAT which is most often asked of God is not his way but his approval of our way.

LOVE'S secret is to be always doing things for God, and not to mind because they are such very little ones.—*F. W. Faber.*

THE sun meets not the springing bud that stretches towards him with half that certainty, as God, the source of all good, communicates himself to the soul that longs to partake of him.—*William Law.*

IF we do not endeavor to do that which is right in every particular circumstance, though trifling, we shall be in great danger of letting the same negligence take place in matters more essential.—*Margaret Woods.*

WE are never without help. We have no right to say of any good work, It is too hard for me to do; or of any sorrow, It is too hard for me to bear; or of any sinful habit, It is too hard for me to overcome.—*Elizabeth Charles.*

MAKE yourselves nests of pleasant thoughts. None of us know, for none of us have been taught in youth, what fairy palaces we may build of beautiful thoughts—proof against all adversity. Bright fancies, satisfied memories, noble histories, faithful sayings, treasure-houses of precious and restful thoughts, which care cannot disturb, nor pain make gloomy, nor poverty take away from us—houses built without hands, for our souls to live in.—*John Ruskin.*

WHEN we are willing to do, we shall be surprised at how much we can do.

STUDY rather to give a good account of the little you have than to make it more.

THE vexation, restlessness, and impatience which small trials cause, arise wholly from our ignorance and want of self-control.—*De Rents.*

SUFFICIENT unto the day is the good thereof, equally is the evil. We must do at once, and with our might, the merciful deed that our hand findeth to do,—else it will never be done, for the hand will find other tasks, and the arrears fall through.—*J. H. Thorne.*

GOD takes a thousand times more pains with us than the artist does with his picture, by many touches of sorrow, and by many colors of circumstance, to bring man into the form which is the highest and noblest in his sight, if only we receive his gifts and myrrh in the right spirit.—*J. Tauler.*

MORNING by morning think, for a few moments, of the chief employments of the day, any one thing of greater moment than others, thine own especial trial, and by one short, strong act commend thyself in all to God, offer all thy thoughts, words, and deeds to him—to be governed, guarded, accepted by him.—*E. B. Pusey.*

EVERY man has his own vocation. There is one direction in which all space is open to him. He has faculties silently inviting him thither to endless exertion. He is like a ship in a river; he runs against obstructions on every side but one; on that side all obstruction is taken away, and he sweeps serenely over a deepening channel into an infinite sea.—*Ralph Waldo Emerson.*

